177578

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

MEMORANDUM **SL-10C**

DATE: April 7, 1992

SUBJECT: Analysis Procedures for Cadmium and Lead in Dust at Granite City, IL

FROM: David A. Payne, Chief
Laboratory Scientific Support Section
Central Regional Laboratory

TO: Brad Bradley, Environmental Engineer
IL/IN Remedial Response Branch
Office of Superfund

This memorandum documents final test procedures used by the Central Regional Laboratory for measuring cadmium and lead in household dust from Granite City, IL. The analytical methodology was used for 59 dust sample analysis at the CRL and replaces test procedures documented to our QA Section on November 8, 1991. The test procedures are incorporated into the Special Analytical Services request forms currently being used for CLP testing of 350 household dusts. Attached are:

1. SAS for Cd & Pb in Dust by ICP Emission Spectroscopy
2. SAS for Cd & Pb in Dust by GFAA when needed due to small sample aliquot weights

We have provided a Flow-Chart to describe "Dust Sample Preparation" which is incorporated in a modified CLP Form I for reporting cadmium (Cd) and lead (Pb) results.

On the attached modified Form I

1. The total sample weight is recorded - See item (1). This can be used in conjunction with areas measured and vacuumed by Ecology & Environment

2. Weight of extraneous material is recorded - See item 2). This is "odd" material like pennies, plastic items, crayons, cigarette butts, etc.

3. Weight of remaining dust is recorded - See item (3). This includes fibers (carpet strands, lint, hair balls from humans, cats, or dogs) and dust. Item (3) does not include the weight of paint chips.

4. Suspect or probable paint chips are separated from "remaining dust," or dust, and the paint chips weights are recorded if greater than 5-10 mg - See item (4).

5. Under "Sample Description," on Form I, the description of any paint chips is recorded. A visual estimate as to the relative quantity of fibers and dust is also recorded. Example - a sample may be 100% dust with no lint. Another sample may be 90% lint (hair balls or shag carpet fibers) and 10% dust. See item (5) on Flow-Chart. The percentages of lint and dust are visual volume estimates. If 70-90% lint percentages are recorded, the dust - item (3) - will still contain most of the sample's weight, as hair balls occupy large volume per unit weight.

6. It is important to note that "remaining dust" or dust sample without paint chips is homogenized with SPEX 8000 Mixer, or equivalent. Dust is mechanically shaken from fibers/lint and rehomogenized if necessary. Analysis aliquots for Cd & Pb are selected from dust shaken from fibers/lint. Weight of dust sample [item (3)] contains the fiber/lint content. Most samples have contained significant amounts of fibers/lint.

7. A Flow-Chart is provided for analysis of suspected paint chips.

8. Cd and Pb results are reported for dust and any suspected or probable paint chips. Mathematical composite (by weight) values for Cd and Pb in dust are also provided on Form I.

The December 1991/January 1992 analysis of dust at our laboratory found most samples to be a mixture of fibers/lint and dust. The two parts could not be completely separated, so we shook out as much dust from the fibers as possible for analysis aliquot homogenization and selection; however sample weights - items (1) and (3) - still contain the fibers. The fibers themselves can not readily be analyzed for Cd & Pb.

Under "Sample Description" - item (5), the relative volumes of fibers and dust are visually estimated as % lint and % dust. The sum of two estimates are 100%.

cc: W. Sanders, ESD
C.T. Elly, CRL
L. Fabinski, ATSDR
G. Schupp, QAS
P. Van Leeuwan, WMD